IN THE CLAIMS

Please amend the claims as follows:

1.(Previously Amended)A semiconductor structure comprising:

a monocrystalline substrate;

a buffer layer formed on the substrate;

a template formed on the buffer layer; and

a monocrystalline material layer formed overlying the template

wherein the template layer comprises a Zintl type phase material comprising at least one of $SrAl_2$, $(MgCaYb)Ga_2$, $(Ca,Sr,Eu,Yb)In_2$, $BaGe_2As$, and $SrSn_2As_2$.

Please cancel Claims 2 and 3.

4. (Currently Amended)A semiconductor structure comprising:

a monocrystalline substrate;

a buffer layer formed on the substrate;

a template formed on the buffer layer; and

a monocrystalline material layer formed overlying the template

[The semiconductor structure of claim 1] wherein the buffer layer comprises $Sr_ZBa_{1-Z}TiO_3$ where z ranges from 0 to 1, the template comprises $SrAl_2$, and the mononcrystalline material layer comprises GaAs.

5.(Currently Amended) The semiconductor structure of claim 1 wherein the template layer further comprises a surfactant material.

6.(Original) The semiconductor structure of claim 5 wherein the surfactant comprises at least one of Al, In, and Ga.

7.(Original) The semiconductor structure of claim 5 wherein the template layer further comprises a capping layer.

8.(Original) The semiconductor structure of claim 7 wherein the capping layer is formed by exposing the surfactant material to a cap inducing material.

9.(Original) The semiconductor structure of claim 7 wherein the cap inducing material comprises at least one of As, P, Sb, and N.

10.(Original) The semiconductor structure of claim 7 wherein the surfactant comprises Al, the capping layer comprises Al_2Sr, and the monocrystalline material layer comprises GaAs.

Please cancel Claims 11 – 14.

15.(Original) The semiconductor structure of claim 1 wherein the buffer layer comprises an oxide selected from the group consisting of alkaline earth metal titanates, alkaline earth metal zirconates, alkaline earth metal hafniates, alkaline earth metal tantalates, alkaline earth metal ruthenates, and alkaline earth metal niobates.

16.(Original) The semiconductor structure of claim 1 wherein the buffer layer comprises $Sr_XBa_{1-X}TiO_3$ where x ranges from 0 to 1.

17.(Original) The semiconductor structure of claim 1 wherein the buffer layer comprises an oxide formed as a monocrystalline oxide and subsequently heat treated to convert the monocrystalline oxide to an amorphous oxide.

18.(Original) The semiconductor structure of claim 17 wherein the monocrystalline Group IV substrate is characterized by a first lattice constant and the monocrystalline material layer is characterized by a second lattice constant different than the first lattice constant.

19.(Original) The semiconductor structure of claim 18 wherein the monocrystalline oxide is characterized by a third lattice constant different than the second lattice constant.

20.(Original) The semiconductor structure of claim 17 wherein the monocrystalline Group IV substrate is characterized by a first crystalline orientation and the monocrystalline oxide is characterized by a second crystalline orientation and wherein the second crystalline orientation is rotated with respect to the first crystalline orientation.

21.(Original) The semiconductor structure of claim 17 further comprising a second amorphous oxide layer formed between the Group IV substrate and the monocrystalline oxide.

22.(Original) The semiconductor structure of claim 21 wherein the Group IV substrate comprises silicon and the second amorphous oxide layer comprises a silicon oxide.

23.(Original) The semiconductor structure of claim 1 wherein the monocrystalline material layer comprises at least one of a semiconductor material, a compound semiconductor material, a metal, and a non-metal.

24.(Original) The semiconductor structure of claim 1 wherein the monocrystalline material layer is a compound semiconductor material selected from the group consisting of III-V compounds, mixed III-V compounds, II-VI compounds, and mixed II-VI compounds.

25.(Original) The semiconductor structure of claim 1 wherein the monocrystalline material layer comprises a material selected from the group consisting of GaAs, AlGaAs, InP, InGaAs, InGaP, ZnSe, and ZnSeS.

26.(Original) The semiconductor structure of claim 1 wherein the buffer layer has a thickness of about 2 - 10 nm.

27.(Original) The semiconductor structure of claim 25 wherein the amorphous oxide layer has a thickness of about 5 - 6 nm.

28.(Original) The semiconductor structure of claim 1 wherein the monocrystalline material layer comprises a semiconductor or a compound semiconductor.

29.(New) The semiconductor structure of claim 1, further comprising an amorphous silicon oxide layer formed between the substrate and said buffer, wherein said buffer is a perovskite oxide.

30.(New) The semiconductor structure of claim 4, further comprising an amorphous silicon oxide layer formed between the substrate and said buffer, wherein said buffer is a perovskite oxide.